

CLAIMS

WHAT IS CLAIMED IS:

1. An article cleaning apparatus comprising:
an air management mechanism;
a cleaning basket assembly;
a fluid regeneration device;
a working fluid device coupled to said fluid regeneration device, said cleaning basket assembly, and said air management mechanism, a clean fluid device coupled to said cleaning basket assembly and said fluid regeneration device;
a controller coupled to said air management mechanism, said cleaning basket assembly, said working fluid device, said regeneration device, and said clean fluid device; wherein said controller is configured to control a cleaning process, including at least a solvent cleaning process, wherein said solvent cleaning process utilizes a solvent based cleaning fluid comprising cyclic siloxane solvent; and
a solvent vapor sensor coupled to the controller to determine amounts of solvent vapor that may flow during said solvent cleaning process.
2. The article cleaning apparatus of claim 1 wherein said solvent vapor sensor is selected from the group consisting of a spectroscopic sensor; a piezo-based sensor; a strain-gauge based sensor; and a capacitive sensor.
3. The article cleaning apparatus of claim 1 wherein said solvent vapor sensor comprises an infrared sensor responsive to siloxane absorbance of infrared radiation.
4. The article cleaning apparatus of claim 1 wherein said solvent vapor sensor comprises an infrared sensor selectively responsive to infrared radiation absorbance of siloxane and water vapor.

5. The article cleaning apparatus of claim 1 wherein said solvent vapor sensor comprises a quartz crystal microbalance sensor including a transducer film.

6. The article cleaning apparatus of claim 5 wherein said transducer film comprises a non-polar polymer.

7. The article cleaning apparatus of claim 6 wherein said transducer film comprises a hydrocarbon chain.

8. The article cleaning apparatus of claim 1 wherein said solvent vapor sensor comprises a strain gauge sensor including a transducer film.

9. The article cleaning apparatus of claim 8 wherein said transducer film comprises a non-polar polymer.

10. The article cleaning apparatus of claim 8 wherein said transducer film comprises a hydrocarbon chain.

11. A solvent vapor sensor for determining amounts of solvent vapor flowing during a solvent dry cleaning process, wherein said solvent cleaning process utilizes a solvent based cleaning fluid comprising cyclic siloxane solvent.

12. The solvent vapor sensor of claim 11 wherein said solvent vapor sensor is selected from the group consisting of a spectroscopic sensor, a piezo-based sensor, a strain gauge based sensor, and a capacitive sensor.

13. The solvent vapor sensor of claim 11 wherein said solvent vapor sensor comprises an infrared sensor responsive to siloxane absorbance of infrared radiation.

14. The solvent vapor sensor of claim 11 wherein said solvent vapor sensor comprises an infrared sensor selectively responsive to infrared radiation absorbance of siloxane and water vapor.

15. The solvent vapor sensor of claim 11 wherein said solvent vapor sensor comprises a quartz crystal microbalance sensor including a transducer film.

16. The solvent vapor sensor of claim 15 wherein said transducer film comprises a non-polar polymer.

17. The solvent vapor sensor of claim 16 wherein said transducer film comprises a hydrocarbon chain.

18. The solvent vapor sensor of claim 11 wherein said solvent vapor sensor comprises a strain gauge sensor including a transducer film.

19. The solvent vapor sensor of claim 18 wherein said transducer film comprises a non-polar polymer.

20. The solvent vapor sensor of claim 18 wherein said transducer film comprises a hydrocarbon chain.

21. An article cleaning apparatus comprising:
a controller configured to control a cleaning process, including at least a solvent cleaning process, wherein said solvent cleaning process utilizes a solvent based volatile cleaning fluid comprising cyclic siloxane solvent; and
a chemical-specific sensor configured to monitor amounts of the volatile solvent fluid, and coupled to the controller to control a drying cycle for extracting a desired level of moisture from the articles.